

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-086808

(43)Date of publication of application : 20.03.2003

(51)Int.Cl.

H01L 29/786

G02F 1/1368

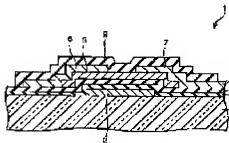
(21)Application number : 2001-274333 (71)Applicant : KAWASAKI MASASHI
ONO HIDEO
SHARP CORP

(22)Date of filing : 10.09.2001 (72)Inventor : KAWASAKI MASASHI
ONO HIDEO
KOBAYASHI KAZUKI
SAKONO IKUO

(54) THIN FILM TRANSISTOR AND MATRIX DISPLAY

(57)Abstract:

PROBLEM TO BE SOLVED: To improve TFT characteristics of a thin film transistor having a transparent semiconductor film.
SOLUTION: A gate insulation film 4 which comprises a first insulation film 4a and a second insulation film 4b is formed on a gate electrode 3. On the second insulation film 4b, a semiconductor layer 5 formed of ZnO or the like is formed. The first insulation film 4a is formed of SiNx or the like having a high insulation property, while the second insulation film 4b is formed of an oxide (for example, SiO₂). Due to this structure, the crystallinity of the semiconductor layer 5 which forms an interface with the second insulation film 4b can be increased, and at the same time, a defective level of an interface between the semiconductor layer and the second insulation film can be reduced. By forming the second insulation film of an oxide,



the capture of oxygen by the material of the second insulation film from the semiconductor layer can be suppressed, resulting in the crystallinity being kept in a good condition near the interface of the semiconductor layer with the second insulation film. Consequently, a thin film transistor which has a low level of leakage current in an off-region, has a high mobility and has a good switching characteristic can be realized.